



Northern Illinois  
University

# Sabbaticals and the Scientific Method

A joint presentation to the  
*Academic Affairs, Student Affairs and Personnel Committee* and the  
*Research and Innovation, Legal and Legislative Affairs Committee*

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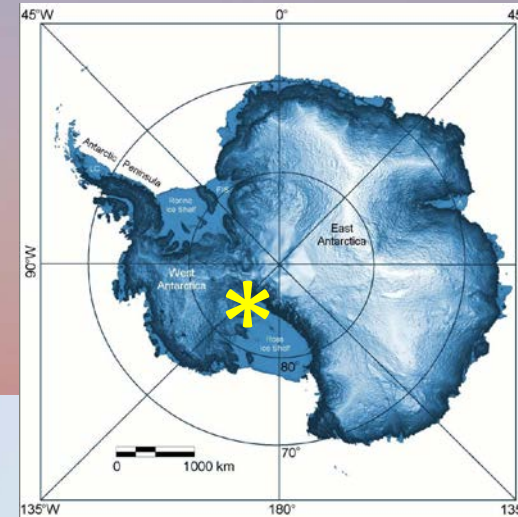
2/13/2020

# My Sabbatical, Fall 2016



Northern Illinois University

- NSF-funded WISSARD Project (2009-2015)
  - Drilling through the West Antarctic Ice Sheet to study ice sheet stability and history
  - Relevant to society because knowing the history of ice sheet changes provides key constraints for models that forecast future behavior in a rapidly warming, CO<sub>2</sub>-enhanced world



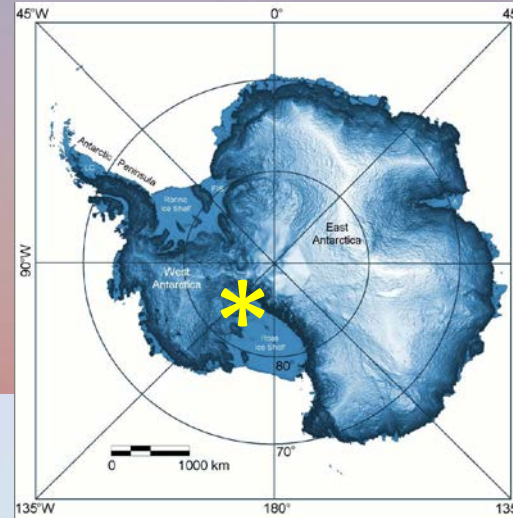


# My Sabbatical, Fall 2016



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- Among the many discoveries, our research showed a very surprising and controversial finding based on analysis of subglacial sediment cores
- We then broadened our analyses to include subglacial sediments we'd recovered years ago



# My Sabbatical, Fall 2016



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- Our chief finding:
  - Following the end of the last Ice Age, ~9,000 years ago, the West Antarctic Ice Sheet retreated much faster and much further than previously known
  - Retreat then halted and the ice sheet regrew to its current configuration, suggesting some previously unknown resilience



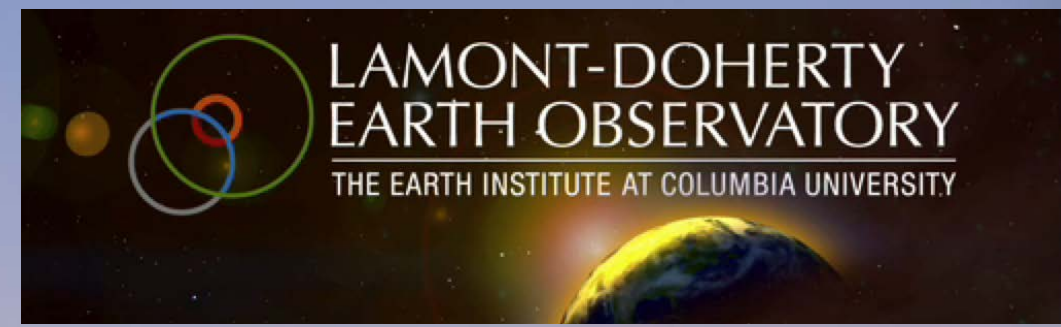


# My Sabbatical, Fall 2016

- We knew that publishing our findings in the peer-reviewed literature was going to be difficult - the scientific community would be resistant
  - The peer-review process often requires convincing skeptical colleagues (often our competitors for research funding) to change their understanding
  - For maximum impact we strive to publish in the most competitive journals
    - *Nature* Magazine is the highest ranked scientific journal, accepting only 7.7% of submitted research papers (following a very long vetting process).



# My Sabbatical, Fall 2016



- **A break from teaching was needed to allow me to focus on the difficult process of writing the manuscript**
  - (note that colleagues at most large research universities have lower teaching loads)
- For my 2016 sabbatical I contacted a colleague at Lamont-Doherty Earth Observatory (LDEO), Columbia University, NY and was offered a formal invitation to be Visiting Senior Scientist
- ***A talk I gave at Columbia on WISSARD research turned into a game-changer!***

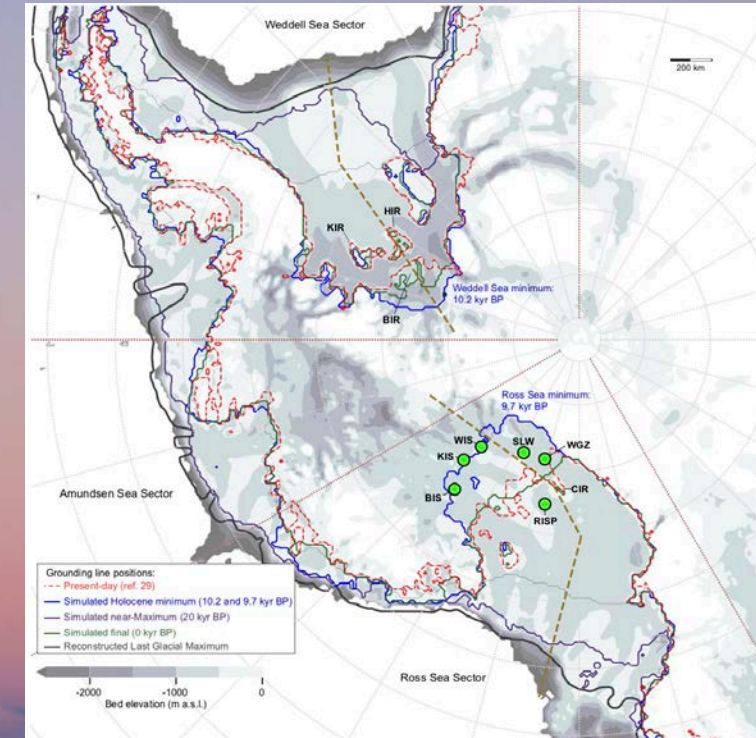
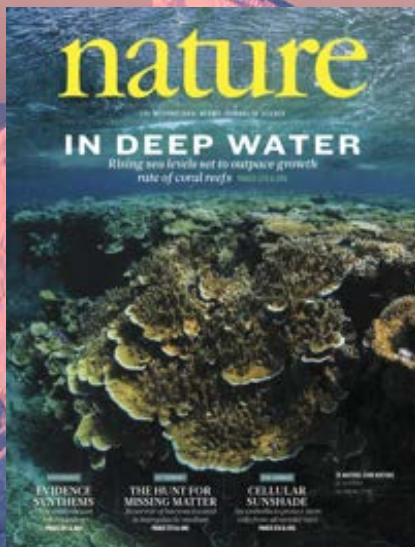




# My Sabbatical, Fall 2016



- Joining forces with my new colleagues resulted in a paradigm-changing paper in *Nature* (published June, 2018)
  - NIU co-authors include Profs. Ross Powell & Nathan Stansell, Ph.D. Candidate Jason Coenen, and NIU alumni Slawek Tulaczyk
- This paper is ranked in the top 1% of scientific research papers in terms of impact (Altimetric score of 263).

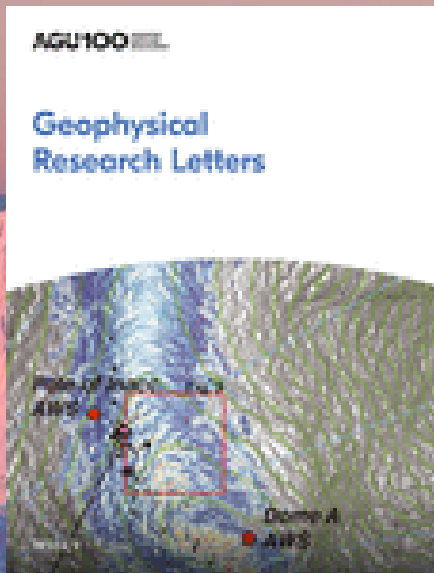


## Extensive retreat and re-advance of the West Antarctic Ice Sheet during the Holocene

J. Kingslake<sup>1,6\*</sup>, R. P. Scherer<sup>2,6</sup>, T. Albrecht<sup>3,6</sup>, J. Coenen<sup>2</sup>, R. D. Powell<sup>2</sup>, R. Reese<sup>3</sup>, N. D. Stansell<sup>2</sup>, S. Tulaczyk<sup>4</sup>, M. G. Wearing<sup>1</sup> & P. L. Whitehouse<sup>5</sup>

# Student Success

- This is only one of a number of prominent WISSARD Project papers, several led by graduate students
- Most recently, Coenen et al., 2019 (just out in print this week)



## Geophysical Research Letters

Research Letter

### Paleogene marine and terrestrial development of the West Antarctic Rift System

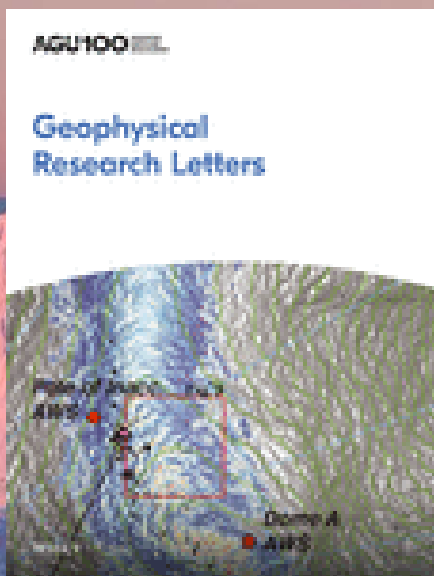
J.J. Coenen ✉, R. Scherer, P. Baudoin, S. Warny, I.S. Castañeda, R. Askin

First published: 19 December 2019 | <https://doi.org/10.1029/2019GL085281>



# Student Success

- Jason can certainly attest to the fact that publishing peer-reviewed research papers is a painful, even gut-wrenching process
  - It requires extraordinary levels of patience, perseverance and the development of a very thick skin! This is similarly the case with obtaining research grants.
  - The chief reward is the respect and esteem of colleagues around the world.
    - This extends to your institution!



## Geophysical Research Letters

Research Letter

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During the sabbatical, I also:

- Gave talks at 5 different universities
- Attended and spoke at 2 research conferences
- Submitted (and was awarded) a \$10,000 research grant from the Columbia University Climate Research Foundation
  - **Used to support NIU undergraduate student research**
- Developed new lines of research and new collaborations
- Held regular Skype meetings with my graduate and undergraduate students
- Had numerous media contacts





# Media contacts

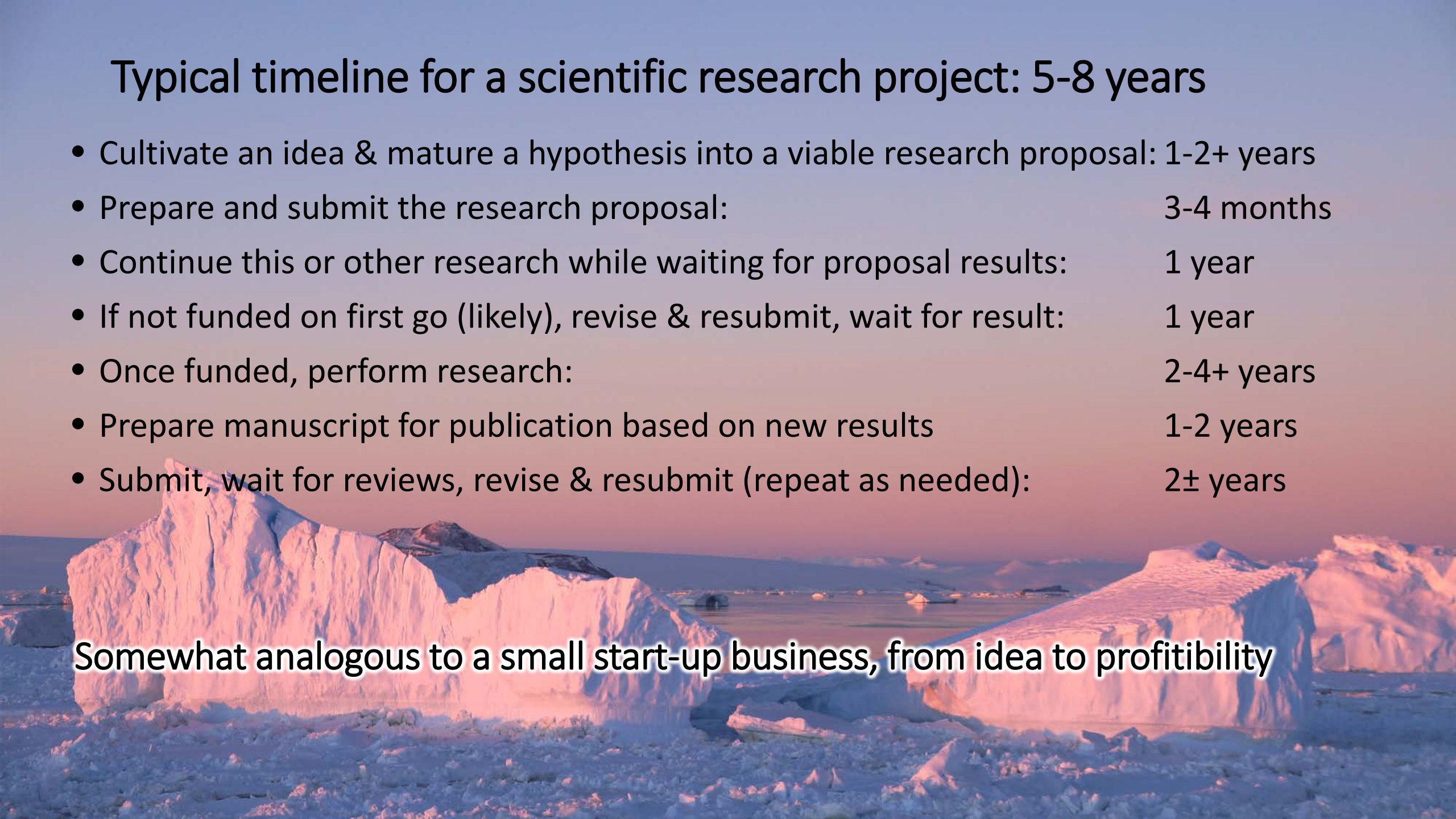
- During the 2016 sabbatical I was interviewed by numerous US and international print and broadcast media regarding my research findings, including the *Washington Post* and *Popular Science*, with a potential reach of 60 million readers, not counting Twitter and Facebook hits
- Media from the 2018 *Nature* paper was cited by 40 major news outlets with a reach of 215 million readers, not including Twitter or Facebook
  - **Advertising Value Equivalency (AVE) of \$2M**



# Typical timeline for a scientific research project: 5-8 years

- Cultivate an idea & mature a hypothesis into a viable research proposal: 1-2+ years
- Prepare and submit the research proposal: 3-4 months
- Continue this or other research while waiting for proposal results: 1 year
- If not funded on first go (likely), revise & resubmit, wait for result: 1 year
- Once funded, perform research: 2-4+ years
- Prepare manuscript for publication based on new results 1-2 years
- Submit, wait for reviews, revise & resubmit (repeat as needed): 2± years

Somewhat analogous to a small start-up business, from idea to profitability







# Sabbatical leaves are a critical component of all research universities

- They enhance the profile of the home institution
- They offer important professional development opportunities for the faculty
- Increase likelihood of future grant funding
- Inform and revitalize pedagogy
- Can offer critical connections, networking and career opportunities for our students (e.g., graduate programs, research collaborations & jobs)
- **All of which pay dividends in enhancing NIU's profile, grant dollars and student career success!**
- **THANK YOU**